This could happen by two methods, either by relative increase of the amount of air, i.e., combustion with an excess of air, or relative diminution of the same, i.e., by means of incomplete combustion. Let the trial be made of investigating m exact figures examples of the action of such methods of working, in furnace management.

As fuel, let the average theoretical producer gas (vide p. 78), be selected which requires 9'46 cubic metres of dry air for the amount of gas which is obtained from 1 kilogramme C, for practical complete combustion, and let it be assumed that at one time 50 per cent, more air, or 14'19 cubic metres, and at the other time 50 per cent, less air, or 4'73 cubic metres is used for combustion. In the first case, then, the products of combustion would be increased by 4*73 cubic metres, in the. second case let it be assumed that of the combustible gases 0-73 cubic metre CO with a combustible value of 2,236 calories remains unburnt, whereby the combustible value of the amount of gas utilised now is placed at 7,554-2,236=5,318 calories. In this connection it is assumed, in this case, that the entire 0 content has been brought into use.

On these assumptions, the following Table N has been calculated, from which under " Utilisation of heat in the combustion chamber" it is to be perceived that by these means the heat in the combustion chamber actually admits of being reduced, inasmuch as instead of 3,444 calories now only 2,454 and correspondingly 2,513 calories appear. Combustion, with deficient air, appears the most favourable in regard to reduction of the free energy.

It would be interesting to obtain an explanation of the resulting combustion temperatures; nevertheless, this is difficult, as the great influences of radiation and conduction are unknown, as to be sure, also, the proportions of mixture of gas, air and products of combustion at each point of the flame are not ascertainable. If one wishes* notwithstanding to establish values, which to some extent render a comparison possible, one can regard the radiation and conduction losses which have happened here as equal and negligible. In the following table the values of C£ for 2,000° have been used for the specific heat of the individual gases, and hereby the